UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

OFFICE OF
PREVENTION,
PESTICIDES
AND TOXIC
SUBSTANCES

July 11, 2011

MEMORANDUM

Subject: Efficacy Review for EPA Reg. No. 69681-1, Super-Chlor;
DP Barcode: 388491

From: Tajah L. Blackburn, Ph.D., Microbiologist
Efficacy Evaluation Team
Product Science Branch
Antimicrobials Division (7510P)

To: Wanda Henson PM 32
Regulatory Management Branch II
Antimicrobials Division (7510P)

Applicant: Medtrol, Inc.
7157 North Austin Avenue
Niles, IL 60714

Formulation from the Label:

Active Ingredient(s)	% by wt.
Sodium hypochlorite	0.525%
Other Ingredients	99.475%
Total	100.000 %

I BACKGROUND

The product, Super-Chlor (EPA Reg. No. 69687-1), is an EPA-approved disinfectant (bactericide, fungicide, and virucide) for use on hard, non-porous surfaces in institutional, and hospital or medical environments. The applicant requested, in part, to amend the registration of this product to add new claims for effectiveness as a disinfectant against Hepatitis B virus. The label states that the product is effective against Hepatitis B virus in the presence of 5% blood serum. Consistent with the registrant's letter (dated March 11, 2011), claims for effectiveness against *Mycobacterium bovis* variant tuberculosis OT451C150 were removed from the label. Studies were conducted at ATS Labs, located at 1285 Corporate Center Drive, Suite 110, in Eagan, MN 55121.

This data package contained a letter from the applicant to EPA (dated March 11, 2011), EPA Form 8570-1 (Application for Pesticide), EPA Form 8570-34 (Certification with Respect to Citation of Data), EPA Form 8570-35 (Data Matrix), two studies (MRID 484219-01 and 484219-02), Statements of No Data Confidentiality Claims for both studies, and the proposed label.

Note: The laboratory reports describe studies conducted for the product, Gluco-Chlor.

II USE DIRECTIONS

The product is designed for disinfecting hard, non-porous surfaces, including: blood glucose meters, carts, cellular phones, counters, examination tables, headsets, patient care equipment, sinks, stethoscopes, telephones, and toilet seats. The proposed label does not identify the types of surfaces on which the product may be used (e.g., stainless steel, glass). Directions on the proposed label provide the following information regarding use of the product as a disinfectant: Thoroughly clean gross filth and heavy soil from surfaces prior to disinfection. Apply towelette and wipe desired surface. Allow treated surfaces to remain thoroughly wet for 5 minutes (30 seconds against Hepatitis B virus). Allow surface to air dry.

III AGENCY STANDARDS FOR PROPOSED CLAIMS

Virucides

The effectiveness of virucides against specific viruses must be supported by efficacy data that simulates, to the extent possible in the laboratory, the conditions under which the product is intended to be used. Carrier methods that are modifications of either the AOAC Use-Dilution Method (for liquid disinfectants) or the AOAC Germicidal Spray Products as Disinfectants Method (for spray disinfectants) must be used. To simulate in-use conditions, the specific virus to be treated must be inoculated onto hard surfaces, allowed to dry, and then treated with the product according to the directions for use on the product label. One surface for each of 2 different product lots of disinfectant must be tested against a recoverable virus titer of at least 10^4 from the test surface for a specified exposure period at room temperature. Then, the virus must be assayed by an appropriate virological technique, using a minimum of four determinations per each

dilution assayed. Separate studies are required for each virus. The calculated viral titers must be reported with the test results. For the data to be considered acceptable, results must demonstrate complete inactivation of the virus at all dilutions. When cytotoxicity is evident, at least a 3-log reduction in titer must be demonstrated beyond the cytotoxic level.

Virucides – Novel Virus Protocol Standards

To ensure that a virus protocol has been adequately validated, data should be provided from at least 2 independent laboratories for each product tested (i.e., 2 product lots per laboratory).

Supplemental Claims

An antimicrobial agent identified as a "one-step" disinfectant or as effective in the presence of organic soil must be tested for efficacy with an appropriate organic soil load, such as 5 percent serum.

IV COMMENTS ON THE SUBMITTED EFFICACY STUDIES

1. MRID 484219-01 "Virucidal Efficacy of Pre-Saturated Towelettes for Hard Surface Disinfection Utilizing Duck Hepatitis B Virus as a Surrogate Virus for Human Hepatitis B Virus" for Gluco-Chlor, by Kelleen Gutzmann. Study conducted at ATS Labs. Study completion date – February 22, 2011. Project Number A10819.

This study, under the direction of Study Director Kelleen Gutzmann, was conducted against Duck hepatitis B virus (Strain 7/31/07; obtained from HepadnaVirus Testing, Inc., Palo Alto, CA), using primary duck hepatocytes (cultures prepared by Valley Research Institute personnel using hatchling ducks received from Metzer Farms) as the host system. Two lots (Lot Nos. A18 and L07) of the product, Gluco-Chlor, were tested according to an ATS Labs Protocol No. SRC20121410.DHBV.1 (copy provided). The product was received ready-to-use as a pre-saturated towelette. The stock virus culture was adjusted to contain a 5% fetal bovine serum organic soil load in addition to 100% duck serum as the organic soil load. Films of virus were prepared by spreading 0.2 mL of virus inoculum uniformly over a defined area (~8 cm x 8 cm) on the bottoms of separate sterile glass Petri dishes. The virus films were dried for 30 minutes at 20.0°C at 49% relative humidity. Two replicates per product lot were tested. For each lot of product, individual carriers were wiped with a saturated towelette with two wipes back and forth for a total of four passes. The carriers were allowed to remain wet for 30 seconds at 21.0°C. Following exposure, 2.00 mL of test medium was added to each Petri dish. The plates were scraped with a cell scraper to re-suspend the contents. The virus-disinfectant mixtures were passed immediately through individual Sephadex columns, and diluted serially in Leibovitz L-15 medium with 0.1% glucose, 10 µM dexamethasone, 10 µg/mL insulin, 20 mM HEPES, 10 µg/mL gentamicin, and 100 units/mL penicillin. Primary duck hepatocytes in multi-well culture dishes were inoculated in quadruplicate with 0.25 mL of the dilutions. The inoculum was allowed to adsorb overnight at 36-38°C in a humidified atmosphere of 5-7% CO_2 for viral adsorption. The cultures were re-fed, and returned to incubation for a total of 9 days at 36-38°C in a humidified atmosphere of 5-7% CO_2. The cultures were re-fed, as necessary. On the final day of incubation, the cultures were scored microscopically for

cytotoxicity. An indirect immunofluorescence assay was then performed. Controls included those for input virus count, dried virus count, cytotoxicity, and neutralization (both product lots). Viral and cytotoxicity titers were calculated by the method of Spearman Karber.

Note: Protocol deviations/amendments reported in the study were reviewed.

2. MRID 484219-02 Virucidal Efficacy of Pre-Saturated Towelettes for Hard Surface Disinfection Utilizing Duck Hepatitis B Virus as a Surrogate Virus for Human Hepatitis B Virus – Confirmatory Assay" for Gluco-Chlor, by Shanen Conway. Study conducted at ATS Labs. Study completion date – February 9, 2011. Amended report date – February 24, 2011. Project Number A10753.

This confirmatory study, under the direction of Study Director Shanen Conway, was conducted against Duck hepatitis B virus (Strain 7/31/07; obtained from HepadnaVirus Testing, Inc., Palo Alto, CA), using primary duck hepatocytes (cultures prepared by Valley Research Institute personnel using hatchling ducks received from Metzer Farms) as the host system. One lot (Lot No. L07) of the product, Gluco-Chlor, was tested according to an ATS Labs Protocol No. SRC20121410.DHBV.2 (copy provided). The product was received ready-to-use as a pre-saturated towelette. The stock virus culture was adjusted to contain a 5% fetal bovine serum organic soil load in addition to 100% duck serum as the organic soil load. Films of virus were prepared by spreading 0.2 mL of virus inoculum uniformly over a defined area (~8 cm x 8 cm) on the bottoms of separate sterile glass Petri dishes. The virus films were dried for 30 minutes at 20.0°C at 50% relative humidity. Two replicates were tested. For the single product lot, individual carriers were wiped with a saturated towelette with two wipes back and forth for a total of four passes. The carriers were allowed to remain wet for 30 seconds at 21.0°C. Following exposure, 2.00 mL of test medium was added to each Petri dish. The plates were scraped with a cell scraper to re-suspend the contents. The virus-disinfectant mixtures were passed immediately through individual Sephadex columns, and diluted serially in Leibovitz L-15 medium with 0.1% glucose, 10 µM dexamethasone, 10 µg/mL insulin, 20 mM HEPES, 10 µg/mL gentamicin, and 100 units/mL penicillin. Primary duck hepatocytes in multi-well culture dishes were inoculated in quadruplicate with 0.25 mL of the dilutions. The inoculum was allowed to adsorb overnight at 36-38°C in a humidified atmosphere of 5-7% CO_2 for viral adsorption. The cultures were re-fed, and returned to incubation for a total of 9 days at 36-38°C in a humidified atmosphere of 5-7% CO_2. The cultures were re-fed, as necessary. On the final day of incubation, the cultures were scored microscopically for cytotoxicity. An indirect immunofluorescence assay was then performed. Controls included those for input virus count, dried virus count, cytotoxicity, and neutralization (the single product lot). Viral and cytotoxicity titers were calculated by the method of Spearman Karber.

Note: The initial report was amended to include the method for the input virus control and correct the amount of filtrate and test medium used for the 10-fold serial dilutions

Note: Protocol deviations/amendments reported in the study were reviewed.

V RESULTS

MRID Number	Organism	Results			Dried Virus Control
			Lot No. A18	Lot No. L07	
484219-01	Duck hepatitis B virus	10^{-1} to 10^{-4} dilutions	Complete inactivation	Complete inactivation	$10^{5.5}$ $TCID_{50}$/0.25 mL
		$TCID_{50}$/0.25 mL	$\leq 10^{0.5}$	$\leq 10^{0.5}$	
484219-02	Duck hepatitis B virus	10^{-1} to 10^{-4} dilutions	---	Complete inactivation	$10^{5.0}$ and $10^{4.5}$ $TCID_{50}$/0.25 mL
		$TCID_{50}$/0.25 mL	---	$\leq 10^{0.5}$	

VI CONCLUSIONS

1. The submitted efficacy data (MRID Nos. 484219-01 and -02) support the use of the product, Gluco-Chlor, as a disinfectant with virucidal activity against Duck hepatitis B virus on hard, non-porous surfaces in the presence of at least a 5% organic soil load for a 30-second contact time. Recoverable virus titers of at least 10^4 were achieved. Cytotoxicity was not observed. Complete inactivation (no growth) was indicated in all dilutions tested. The initial and confirmatory studies were performed at the same laboratory but under the direction of different study directors. The confirmatory study tested one product lot.

VII RECOMMENDATIONS

1. The proposed label claims that the product, Super-Chlor, is an effective disinfectant against Hepatitis B virus on hard, non-porous surfaces in the presence of 5% blood serum for a 30-second contact time. This claim is unacceptable until the registrant provides information verifying that Gluco-Chlor is identical to Super-Chlor, the subject of the current efficacy review.

2. The following revisions to the proposed label are recommended:

- Identify the types of surfaces on which the product may be used (e.g., chrome, glass, stainless steel, vinyl).

- Under the "Precautionary Statements" section of the proposed label, change "with soap and water after handling" to read "with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the toilet."

- Add page numbers to each page of the proposed.